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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Bengt Svensson

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EXAMINER

CHANG, JENNIFER F

ART UNIT

PAPER NUMBER

2821

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,611	Applicant(s) SVENSSON ET AL.	
	Examiner JENNIFER F. CHANG	Art Unit 2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Amendment A received November 20, 2008 has been entered into the record.
2. Claims 1-9 are pending.

Response to Arguments

3. The amendments to the claims are sufficient in overcoming the claim objections and rejections under 35 U.S.C. 112.
4. Applicant's arguments have been fully considered but they are not persuasive. Applicant argues that Proctor does not teach that the elements change properties, i.e. change between active and parasitic operation. On the contrary, Proctor teaches "the elements can be operative in either the active or parasitic mode as determined by an element controller," [0071]. Furthermore, the amendments to claim 1 are not sufficient to overcome the prior art disclosed by Falk in view of Proctor. Therefore, rejection of claims 1, 7 and 8 under 35 U.S.C. 103(a) under Falk in view of Proctor is not withdrawn.
5. Applicant's amendments with respect to the rejection(s) of claim(s) 2-6 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Falk in view of Proctor, further in view of Derneryd.

Specification

6. The disclosure is objected to because of the following informalities: It appears that on page 8, line 3, the applicant intended to refer to Figure 8, but the disclosure refers to Figure 7.

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The context describes the Tx wave-guides present and parasitically excited, which is illustrated in Figure 8. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 has been amended to teach *active* receiving radiator elements in the receiving array columns operate as parasitic elements in a transmit mode and *active* transmitting radiator elements in the transmitting array columns operate as parasitic elements in a receive mode. However, the specification teaches that when operating in receive mode, the transmit wave-guides are passive, i.e. terminated with a matched load (page 8, lines 9-15) and further refers to them as "the *inactive* wave-guides, i.e. receive wave-guides in a transmit operation and vice versa," (page 8, line 17, emphasis added). Furthermore, claim 9 contains subject matter that contradicts the new limitations to claim 1, disclosing that only one set of series-fed columns are actively used and the other set may be terminated by a load to form parasitic columns. The specification therefore does not teach that the transmitting radiator elements are active when

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operating in a receive mode or that the receiving radiator elements are active in a transmit mode, and the amendments therefore constitute new matter.

Claim Rejections - 35 USC § 103

9. Claims 1, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk (US 2002/0003502) in view of Proctor (US 2001/0031648 A1).

The applied reference by Falk has a common assignee with the instant application. Based upon the publication date of the reference (January 10, 2002), it constitutes prior art under 35 U.S.C. 102(b). This rejection under 35 U.S.C. 103(a) cannot be overcome by an affidavit under 37 CFR 1.130, 37 CFR 1.131 or 1.132.

As to claim 1, Falk teaches a sparse array antenna comprising series-fed antenna array columns comprising

transmitting array columns (“transmitting portion,” 15, Fig. 1) and receiving array columns (“receiving portion,” 10, Fig. 1) tuned to a respective transmit and receive frequency, each transmitting array column having multiple active transmitting radiator elements and each receiving array column having multiple active receiving antenna elements (col. 3, lines 5-10), wherein

said transmitting and receiving array columns are formed with a given distance between each one of the active transmitting radiator elements and each one of the active receiving radiator elements, the series-fed antenna columns being arranged in parallel to each other, thereby forming a symmetric interleaved transmit/receive array (Fig. 1).

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Falk does not teach the active receiving radiator elements in the receiving array columns operate as parasitic elements in a transmit mode and active transmitting radiator elements in the transmitting array columns operate as parasitic elements in a receive mode, thereby reducing creation of grating lobes. Proctor teaches an antenna comprising a plurality of elements, where less than all of the elements are active elements, i.e., for radiating or receiving a signal where the other elements serve as parasitic elements to reflect, redirect or absorb some portions of the emitted signal to advantageously shape the transmitted beam in the transmit mode and similarly advantageously affect the receive beam pattern. The elements can be operative in either the active or parasitic mode as determined by an element controller [0072]. Therefore, it would have been obvious to one of ordinary skill in the art that the inactive elements in the antenna array of Falk (i.e., the transmitting columns during a receive mode or the receiving columns during a transmit mode) can operate as parasitic elements as taught by Proctor, and one of ordinary skill in the art would have been motivated to utilize the teachings of Proctor to provide a means for using the non-active antenna elements to advantageously shape and affect transmit and receive beam patterns.

As to claim 7, Falk teaches each one of the series-fed antenna columns is narrowly tuned within a respective frequency band to thereby reduce coupling between the transmitting and receiving bands used ("narrow-band tuned for a respective transmitting or receiving frequency," abstract).

As to claim 8, Falk teaches the series-fed antenna array columns are connectable to and feedable from an active receive/transmit (T/R) module ("feeding wave-guide," col. 3, lines 6-10, 4, 6, Fig. 1).

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10. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Falk in view of Proctor as applied to claim 1 above, and further in view of Derneryd.

As to claim 2, Falk does not teach a distance between each transmitting antenna array column and each receiving antenna array column is close to one wavelength to thereby obtain a sparse array. Falk teaches the antenna elements spaced apart by $\lambda/2$ (col. 1, line 64). Derneryd teaches a distance between each array column can be increased to be close to λ without generating grating lobes. It would have been obvious to one of ordinary skill in the art to modify the antenna array taught by Falk in view of Proctor by increasing the distance between adjacent arrays to about $d=\lambda$ in order to maximize the main lobe gain for a signal, and can also result in a reduction in the number of radiating elements in the array.

As to claim 3, Falk teaches a series-fed antenna array formed as extended ridged slotted wave guides (“array of wave guides...comprising a symmetrically or un-symmetrically placed ridge,” abstract), comprising slotted transmitting wave-guides and slotted receiving wave-guides, tuned to said respective transmitting and receiving frequency (“narrow-band tuned for a respective transmitting or receiving frequency,” abstract).

As to claim 4, Falk teaches when having number n of slots in each slotted transmitting wave-guide the number of slots in each slotted receiving wave-guide being generally $n + x$, where x represents an integer digit ($x = 0, 1, 2, 3, \dots$). Claim 4 is so broad that it fails to further limit claim 3 because any number of slots for the receiving and the transmitting wave guides would read on this claim.

As to claim 5, Falk teaches the series-fed array columns are formed as extended transmission lines (“wave guides,” abstract) containing radiation elements (“slots,” abstract), the

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array columns being tuned to said respective transmitting and receiving frequency (“narrow-band tuned for a respective transmitting or receiving frequency,” abstract).

As to claim 6, Derneryd teaches the sparse array antenna having a main lobe is arranged to be scannable to also provide reduced sidelobes entering visual space when scanning the main radiation lobe from an off boresight direction (col. 1, line 57- col. 2, line 9).

As to claim 9, Proctor teaches only one set of series-fed columns being actively used (508, Fig. 8) and another interleaved set of series-fed columns (500 or 502, Fig. 8) may be terminated by a load (504 and 506, Fig. 8) forming parasitic columns of the sparse array antenna.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER F. CHANG whose telephone number is (571) 270-3831. The examiner can normally be reached on Monday-Friday 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Owens can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JENNIFER F CHANG/
Examiner, Art Unit 2821

/Douglas W Owens/
Supervisory Patent Examiner, Art Unit 2821
January 19, 2009